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APL★PLUS® News

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APL in the News

L.A. Times Goes to Press With APL★PLUS Mainframe and SHAREFILE Systems

1988 is a major news year. Not only will Americans elect a new president, but all the events that lead up to the presidential election — the speeches, the primaries, the conventions, have a great impact on the American people. More and more, Americans are making informed choices about the election of public officials and other matters that shape daily life in the U.S. The events and opinions in one part of the country can shape ideas across the entire nation. And, one highly regarded source of the information on public opinion across the country is the *L.A. Times* Poll.

In March of this year, with the important Super Tuesday primaries one week away, the *Times* switched its entire polling operation from VS APL to STSC's APL★PLUS and SHAREFILE Systems.

Thousands of Opinions

In an average year, the *Times* conducts between 10 and 25 surveys on social and political topics. The topics covered can range from voter preferences to ideas about earthquakes. Each survey involves up to 80 interviewers working by phone across the country or located at a single site. The results of at least 2,000 separate interviews are fed into a *Times* mainframe computer running the APL★PLUS and SHAREFILE Systems.

A typical election night survey, or exit poll, can consist of as many as 10,000 separate interviews. Each interview will contain information on how an individual voted, why the person voted a certain way — was it the candidate, an issue, or the party that caused a vote to be cast in a particular way — as well as demographic information about the voter being interviewed.

Presentation and Data Analysis

As the interview responses come in, they are stored in data tables for ease of reference, while election analysts, working over dial-up lines from anywhere in the country, begin their work. Being an interactive system, the APL★PLUS System lets the analysts restructure the data "on the fly" to get different views of the information. When all the information is received and conclusions drawn to within ±3% statistical accuracy, reporters make the survey results available to *Times* readers, television networks, educational institutions or other research organizations.

Mr. I.A. "Bud" Lewis, Director of the *Times* Poll and architect of the new system, has been involved in applying computers to surveys since the early 1960s. "In those days, we used COBOL to help manage the polls," says Lewis, "but it could take as long as three months to code any last-minute changes we had to make. What we needed was a fast, interactive software environment. We first used APL in 1970 when we tried it as a backup system to COBOL for an election poll. Well, it turns out that the APL system was the only one that worked, and we've stuck with it ever since."

Continued on page 3

APL Courses Scheduled Worldwide

STSC is offering the following APL courses during the last quarter of 1988.

A complete schedule for the first half of 1989 will be available shortly. To receive a copy, just call our APL Educational Services Department at (301) 984-5131 or (800) 638-6660.

Introductory APL
Chicago, October 3-7
Los Angeles, November 7-11
New York, October 10-14
Washington, D.C., November 14-18

Intermediate APL
Los Angeles, December 5-9
San Francisco, October 31-November 4

Intermediate APL for Financial Analysis
New York, October 3-7

Advanced APL with Applications Development
New York, December 5-9

APL★PLUS Mainframe Enhancements
Please call for details

APL★PLUS SHAREFILE System Administrators
Washington, D.C., December 5-6
One-Day Extension, December 7

To ensure individual attention, class size is limited to 12 students per session, so be sure to register early. Reserve space today or call now for a free brochure and registration materials. The above classes, and others, can be customized and taught at your own facility. Call STSC Educational Services for more information.

International Courses Available

APL★PLUS dealers worldwide are currently offering a wide range of APL courses. The following is a listing of courses offered for the remainder of 1988. For details on these and other courses, contact your local dealer.

Canada
Introduction to APL★PLUS PC
December 3-8
Advanced APL
October 12-13
Contact: The Braegen Group
67 Yonge Street
Suite 100
Toronto, Ontario M5E 1J8
Tel. 416-366-6363

England
APL Fundamentals
October 11-13
October 25-27
November 8-10
November 22-24
December 6-8
APL★PLUS PC Intermediate
October 3-6
APL★PLUS Systems Design
November 14-17
Contact: Cocking & Drury
180 Tottenham Court Road
4th Floor
London W1P 9LE
Tel. 44-1-436-9481

France
Introduction to APL
October 19-21
November 23-25
December 1-2
APL★PLUS II System
November 7-9
Contact: Uniware
15 Rue Erlanger
75016 Paris
Tel. 33-1-45-272061

Netherlands
APL Introductory Course
November 7-9
APL Advanced Course
October 25-26
Contact: Oasis B.V.
Lekstraat 4
3433 ZB
Nieuwegein, Netherlands
Tel. 31-3482-66336

APL★PLUS *News*

STSC, Inc.
2115 East Jefferson Street
Rockville, Maryland 20852

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L.A. Times *continued from page 1*

The Presses Keep Rolling

On a typical election night, results begin coming into the *Times* computing center from early in the morning until after the polls close, around 8:00 p.m. There, the staff, elections analysts, and writers, facing a publication deadline at 11:00 p.m., need to receive, interpret, and publish the results of that night's survey. Senior Systems Analyst, Dr. Detlef Matthies, told *APL★PLUS News*, "Our window is so tight that a ten minute down-time is quite serious. A 30-minute down-time could mean our articles won't make it to the newsstands in the morning. Other research organizations can take up to three months to analyze survey results. We have a little over three hours."

With such critical deadlines, *The Times* needed a system that was fast, easily changed, and still provided reliable data. In March of 1988, the decision was made to run APL★PLUS and SHAREFILE live for the first time. The conversion from VS APL was completed just three weeks prior to the Super Tuesday primaries, probably the second biggest polling event next to the presidential election itself. This survey comprised six separate polls in six states and covered 300 separate precincts. With only a week before its live debut, no smaller survey was available for a test run of the new system. It was a bold move, but one that proved to be beneficial. The Super Tuesday survey article appeared in Wednesday morning's first edition. "The system performed flawlessly for us," said Matthies.

Los Angeles Times

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American Carries Torch

His Olympic Moment to Last Forever

By BILL DWYRE, *Times Sports Editor*

WONJU, South Korea—It is early evening in the Land of the Morning Calm, and the people of South Korea are about to hand a precious piece of their history to an ugly American.

Actually, I don't think I'm really an ugly American, just a cynical one. Things like parades and fireworks stopped turning me on when I was about 8. I have always been uneasy with public displays of affection, especially those that are mass produced.

And if there ever was one that could have been inspired by the assembly lines in Detroit, it is the Olympic torch relay, with its free-flowing system of handing off one segment to another until the final flame, the end product of all the segments, is lighted to burn in the Olympic Stadium.

No More Cynicism

So, where is my cynicism as I stand in the middle of a street in this east-central Korean city—a Pacific Ocean, an International Date Line and a world away from friends and loved ones—and watch my torch-carrying predecessor approach from a distance?

Why am I getting goose bumps? Why do I suddenly feel such an affinity for the Koreans and U.S. soldiers lined up on either side of me, poised to serve as my convoy with the torch for the next kilometer?

Why did I feel like Santa Claus for the last half hour or so, as all of them crowded around me to pose for one picture after another with their torch bearer? Why did something that normally would make me feel silly and self-conscious make me feel so good and so proud? Why so much emotion from some-

The Times Poll

Presidential Nominees in 47%-47% Dead Heat

By GEORGE SKELTON, *Times Staff Writer*

George Bush and Michael S. Dukakis now are running neck and neck in their race to the White House, with each candidate demonstrating clear strengths and weaknesses, the Los Angeles Times Poll found.

With less than eight weeks remaining before the election, voters regard Bush as the candidate, by far, who could best handle foreign affairs and keep the nation strong militarily, the survey showed.

Strength From Reagan

In addition, Bush derives strength from his ties to the continually popular President Reagan. And the Republican nominee has scored on the specific issue of taxes and the broad subject of patriotism, as symbolized by his emphasis on the Pledge of Allegiance.

On the other hand, Dukakis benefits from the voters' strong desire to "point the country in a new direction," away from Reagan Administration policies, even if the President is popular.

The Democratic nominee is helped by the overwhelming feeling among voters that not every-body has shared equally in the nation's economic growth. This is a problem for Bush that is compounded by the fact many people see him a candidate who "favors the rich."

Additionally, Dukakis' running mate, Texas Sen. Lloyd Bentsen, is more highly regarded than the GOP vice presidential nominee, Indiana Sen. Dan Quayle. In fact, most voters with any opinion about Quayle think he would not be "qualified to take over the job of President."

However, about the most positive thing voters can say about either Bush or Dukakis is that "he's nice," interviewers found.

And, on the negative side, voters tend to think Dukakis is "too liberal" and "doesn't have a clear message."

The Times poll, directed by I.A.

Please see POLL, Page 28

Los Angeles Times POLL

Reagan Releases U.N. Payments

Cites Fiscal Reforms, Peace Role; $188 Million Promised by Oct. 1

By DON SHANNON, *Times Staff Writer*

WASHINGTON—President Reagan on Tuesday ordered the release to the United Nations of $188 million in back dues from the United States, averting a financial crisis at the world organization as it struggles with crucial peacekeeping efforts in several regions of the globe.

White House spokesman Marlin Fitzwater, announcing the unfreezing of the payments, said the President took the action because of U.N. progress in reforming financial management procedures and because of the organization's "very constructive" work in helping negotiate an end to the Persian Gulf War and the Soviet military occupation of Afghanistan.

The United Nations is to receive the $188 million by Oct. 1. Fitzwater said Reagan will also ask the State Department to set up a three-to five-year schedule for payment of the rest of the dues the United States owes—an additional $520 million.

Long-Term Goals Hailed

"The U.N. is directly serving important, long-term objectives of this Administration to end regional conflicts and advance peace and freedom around the world," Fitzwater said. "The presidential action makes it clear that the United States is prepared to meet its obligations in support of these peacekeeping efforts."

U.N. Secretary General Javier Perez de Cuellar, who has complained bitterly about the delinquent payments, hailed Reagan's decision as a "most positive development."

However, he said in a statement, "the partial payment of arrears does not solve the financial crisis of the organization." He said the United Nations will continue to be strapped by inadequate resources "until the outstanding contributions of all member states are paid."

3 Detainees in S. Africa Flee to U.S. Consulate

By SCOTT KRAFT, *Times Staff Writer*

JOHANNESBURG, South Africa—Three of South Africa's most important political detainees escaped Tuesday from a Johannesburg hospital and found refuge a mile away in the U.S. Consulate, setting up one of the stickiest diplomatic dilemmas here for the United States in many months.

The State Department said it had been in frequent contact with the men before they were detained without charge more than a year ago and that "we . . . hold them in high regard."

No U.S. Time Limit

"We will not press them to leave against their will," said William Zavis, a spokesman at the U.S. Embassy in Pretoria, reading a State Department statement. In Washington, a State Department official noted that there was no time limit on that offer.

Zavis noted that the United States does not offer political asylum at its diplomatic missions. But Krish Naidoo, the detainees' attorney, said they sought freedom from

"Real-Time" Analysis

Writers need to be able to spot trends and make projections based on the results as they come in. They do not have the luxury of time to wait for all the data to be completely received before drawing conclusions. With APL★PLUS and SHAREFILE, the information being read is so close to real-time information that the writers can concentrate on the information rather than the possibility of missing the deadline.

The *Times* poll utilizes one of four large mainframes in the *L.A. Times* computing center. The present system runs under VM, but plans are under way to switch the application to MVS in the future. Some development work is done using APL★PLUS PC, but will be moved to APL★PLUS II on 80386 PCs soon.

Keeping America Informed

APL★PLUS is used in numerous ways, but perhaps none is as far-reaching and as time-critical as this *L.A. Times* polling application. It clearly highlights the ability of APL★PLUS to perform lightning-fast analyses on large amounts of data and to change those analyses in an instant. But, more importantly, it helps to keep the entire country informed, educated, and in touch with the political climate in America.

Casual Graphics

By Ralph L. Fox

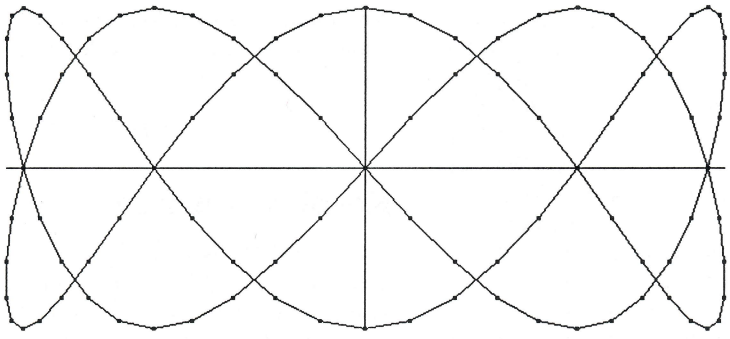
One of the legendary advantages of APL over other languages is its interactive use for exploratory analysis — the ready ability to calculate, restructure, format, and display arrays of data without the need for extensive programming. Historically, the graphics realm has been resistant to an analogous immediate feedback mode. Now that APL★PLUS II and APL★PLUS PC support the industry-standard GSS*CGI graphics device drivers and offer a companion workspace of APL VDI functions, graphics-oriented data analysis has attained a new level of ease and immediacy. This change is principally due to a suite of functions in the VDI workspace that produce bar charts, line graphs, pie charts, etc. These functions are written for casual use, but also can be enhanced for production use.

Once you install the GSS*CGI device drivers for your hardware configuration, a typical graphic analysis session in the VDI workspace might proceed as follows. First, establish some common parameters for your explorations. The sample function below includes some global variable assignments that could have been made in immediate execution mode, but are captured in a function since we anticipate numerous returns to our starting point:

```
    ∇ SETUP
[1]   ⎕IO←1  ⋄  FR←70 50 630 340  ⍝  Rectangular frame in pixels
[2]   NP←100  ⋄  NXI←NYI←10       ⍝  Number of points & tic intervals
[3]   T←0 0,(2÷NP)×⍳NP            ⍝  Parametric values from 0 to 2 pi
[4]   X←1 0 2×T  ⋄  Y←2 0 5×T     ⍝  X and Y values
    ∇
```

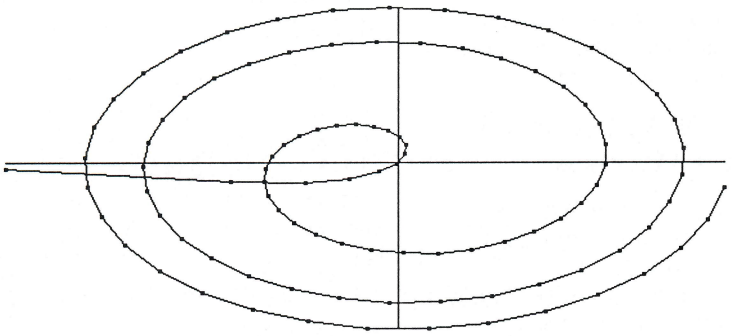
Now plot the paired X- and Y-values on the "display" device (screen) by calling the XYPLOT function:

```
DISPLAY 'FR XYPLOT X,[1.5]Y'
```



You can put the last expression on a function key or in a simple function for repeated use. Then alter your data and re-plot:

```
L←⊗T←○¯.05+3×(2÷NP)×⍳NP  ⋄  X←L×2○T  ⋄  Y←L×1○T
DISPLAY 'FR XYPLOT X,[1.5]Y'
```



One step that is independent of XYPLOT (and similar routines) is the placement of labels on the graph. A utility function AXIS produces the set of points needed to draw an axis with tic marks. The following function then can be used to label some or all of the tic marks.

```
    ∇ A TICLABEL B;I;N;P;⎕IO
[1]   ⍝ Place tic labels on graph
[2]   ⍝ Left arg = output of AXIS fn, a matrix of points where every
[3]   ⍝   third point represents the end of a tic mark
[4]   ⍝ Right arg = (nested) array consisting of
[5]   ⍝   [1]  Number of tics before first label
[6]   ⍝   [2]  Number of tics to skip between subsequent labels
[7]   ⍝   [3 to N]  Individual labels for the selected tics
[8]   ⍝ On APL*PLUS PC, store labels B[3 to N] in a global segmented
[9]   ⍝   string LABELS and make the modifications shown below
[10]  ⍝ Example: label quarters on a 12-month time axis
[11]  ⍝   A←12 AXIS 40 30 280 30 0 ¯5  ⍝  points for X-axis & tics
[12]  ⍝   V_PLINE A  ⍝  draw axis
[13]  ⍝   A TICLABEL 0 2 '1988' 'Mar' 'Jun' 'Sep' '1989'  ⍝  apply labels
[14]  ⍝ You can change any Graphics Text settings before using this fn
[15]
[16]  ⎕IO←I←1 ⋄ P←(B[1],0)↓(0=3|⍳1↑⍴A)⌿A  ⍝  tic points to consider
[17]  N←1↑⍴P←((1↑⍴P)⍴1,B[2]⍴0)⌿P          ⍝  skip some of the tics
[18]  (↓P) V_GRPH_TXT ¨ N⍴2↓B             ⍝  APL*PLUS II (nested) version
[19]
[20]  ⍝⍝⍝ L1: →(I>N)⍴0  ⍝  APL*PLUS PC (non-nested) version
[21]  ⍝⍝⍝ P[I;] V_GRPH_TXT LABELS SSINDEX I  ⍝  SSINDEX from ASMFNS ws
[22]  ⍝⍝⍝ I←I+1 ⋄ →L1
    ∇
```

Before illustrating this function in conjunction with a bar plot, let's change the Y-data: `Y←(1○.25×⍳40)÷⍳40`

Next run CALC, a function which produces the Y-labels:

```
    ∇ CALC
[1]   YL←⌊/Y  ⋄  YH←⌈/Y  ⍝  low & high Y
[2]   YLAB←↓'M<->F7.2' ⎕FMT YL+0,((YH-YL)÷NYI)×⍳NYI  ⍝  Y-axis labels
[3]   ⍝⍝⍝ Line above for APL*PLUS II; line below for APL*PLUS PC
[4]   ⍝⍝⍝ LABELS←,'/','M<->F7.2' ⎕FMT YL+0,((YH-YL)÷NYI)×⍳NYI  ⋄  YLAB←⍬
    ∇
```

STSC Announces APL★PLUS Upgrades

Important upgrades to several APL★PLUS products have recently been completed and are available now. Contact your STSC sales representative or local dealer for more information.

APL★PLUS for UNIX, Version 3.3 For Sun 3 and Sun 4 Machines.

This is the first release of the APL★PLUS System for the Sun 4, which utilizes "SPARC" reduced instruction set architecture. According to recent benchmarks, the Sun 4 is currently the fastest machine to run APL★PLUS for UNIX Systems.

Highlights of Release 3.3:

- Major performance improvements, particularly in floating-point and integer arithmetic operations.
- Makes much better use of Sun 3's 68881 CPU and the floating-point accelerator chip in the Sun 4.
- □MF Monitoring Facility used to identify places in APL programs where the most CPU time is used. □MF makes it easy to optimize applications.
- Network Support for component files. Nodes on a local area network can now tie files on other machines and safely read and update the files at the same time as other users. Previously, safe file sharing was possible only when APL sessions were running on the same machine.

APL★PLUS for VAX/VMS Version 1.1

This update to the APL★PLUS VAX/VMS system has been shipped to all sites currently on the STSC Software Service Plan. New features in APL★PLUS VAX/VMS 1.1 include:

- An interface to VMS "Record Management Service" files. These powerful native file facilities provide great flexibility in handling files in record format.
- Enhancements to □NA allow "Call-by-Descriptor," a convention used by many existing subroutine libraries. Now, these libraries can be called by APL.
- Performance improvements in)LOAD and)SAVE are 3 times faster in the current release than in Version 1.0.

Mainframe Enhancements/ SHAREFILE, Version 6.1

Release 6.1 of the APL★PLUS Mainframe Enhancements/SHAREFILE System for both the VM and MVS operating systems incorporates many improvements suggested by our clients. This release is being shipped to all clients currently on the Maintenance Plan. Among others, the enhancements include:

- Dramatically improved performance of □NL
- Improved SHAREFILE error message reporting that allows easier diagnosis of file system failures
- Added "QUICKFMT" option for the SFSFMT program
- A new OPFNS workspace that allows file names and user IDs to be specified as literal strings or in hexadecimal notation for greater flexibility
- Enhanced SHAREFILE shutdown messages will now display the name of the file system being shut down.

New Spreadsheet Manager Available Now

This new version of the APL★PLUS Spreadsheet Manager contains the following features:

- Improved formatting of language integers.
- LOTUS 1-2-3 formulas are now fully revealed in APL spreadsheets and are retrievable under program control.
- A new customization capability lets you restrict or remap some of the standard keystroke commands.
- A separate workspace of spreadsheet manager utility functions is now included. These utilities allow you to easily move entire rows and columns, search for defined formulas, jump to any spreadsheet location under program control, and more!

To receive this update, just mail your original Spreadsheet Manager disk, along with the registration card if it has not already been returned, and $35.00 (payable to STSC) to:

APL★PLUS PC Help Line
Attn: Spreadsheet Manager Update

APL★PLUS II Speeds Users

The APL★PLUS II System for 80386 was released in the U.S. ahead of schedule during the first week of July. This true second-generation APL system features nested arrays and generalized operators — all in a standard DOS environment.

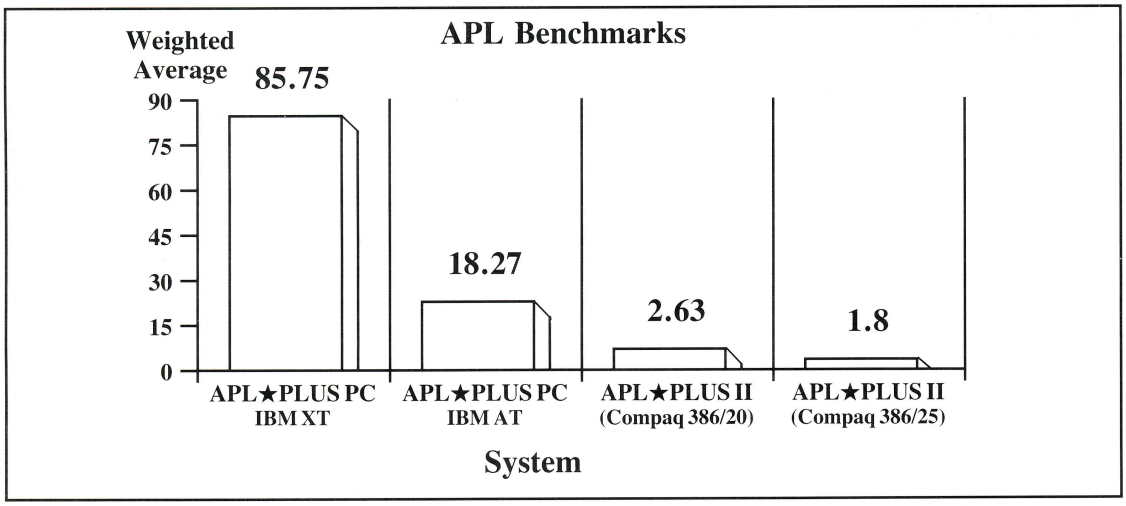
Besides the nimble feel and expansive capacity of APL★PLUS II, early users of the product have been most impressed with the productivity enhancers built into the product. The ability to use the full-screen editor with a collection of APL objects and native files, to switch keyboard layouts with a single keystroke or pull-down a menu selection, and to use the "Each" operator instead of a write-and-throw-away looping program — are just a few of the features that users like. Others have been extremely pleased at the high degree of compatibility with the APL★PLUS PC System. One user reported that he had to modify only 15 out of 3000 APL functions in his application, a 99.5% compatibility rate!

Selected benchmark data for APL★PLUS II is summarized below. The table is an extension of the benchmark format first published in *"APL★PLUS News,"* Spring, 1987. Seven standard STSC benchmark tests were run; the first six results (Files excluded) were then combined into a weighted average using a 10-10-15-20-10-35 percentage scale. This table compares APL★PLUS II Version 1.0 with APL★PLUS PC version 7.0 both running on a Compaq Portable 386 (20 MHz), with and without a math coprocessor. Times shown are in seconds.

The presence of the 80387 math coprocessor has a substantially greater impact on APL★PLUS II than on APL★PLUS PC. Based on weighted averages, the coprocessor reduced execution time by 48% for APL★PLUS II, and 18% for APL★PLUS PC.

The graph below presents the weighted averages across a variety of APL systems and hardware, including a new 25 MHz microcomputer. Note the dramatic 48-times improvement you can attain while staying within the familiar PC/DOS environment.

	Small Int	Large Int	Flt Point	Mixed Fns	Scalar Opers	Fn Exec	File Op	Wtd. Avg
APL★PLUS II (80387)	0.49	0.49	2.91	2.75	2.19	3.79	19.07	2.63
APL★PLUS II	1.38	1.37	16.92	2.75	3.41	3.79	20.60	5.03
APL★PLUS PC (80387)	3.29	13.35	13.46	12.09	11.04	5.60	30.87	9.19
APL★PLUS PC	3.29	20.71	20.82	11.98	13.29	5.66	32.46	11.23

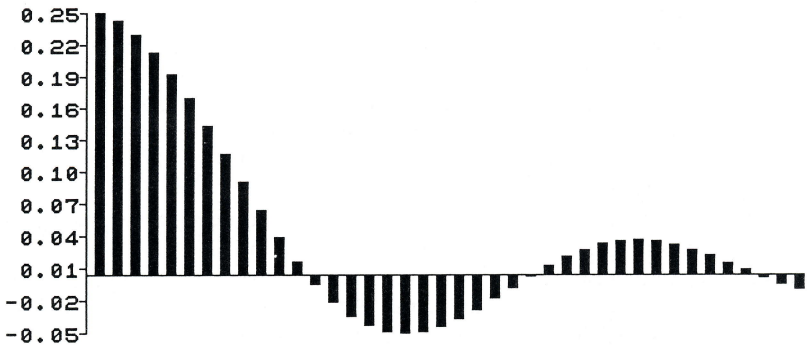


Treasure Chest *continued from page 5*

Finally, execute this function which packages several components before displaying the plot:

```
    ∇ GRBP;A;B
[1]   ⍝ Graph Bar Plot of Y with vertical labels
[2]   PL←'FR BARPLOT Y ◇ B←V_SET_TXT_ALGN 2 1'  ⍝  "right-half" align text
[3]   PL←PL,' ◇ V_PLINE A←NYI AXIS FR[1 2 1 4],¯5 0'  ⍝  draw Y-axis tics
[4]   PL←PL,' ◇ A TICLABEL 0 0,YLAB'  ⍝  add labels
[5]   DISPLAY PL  ⍝  send plot to display screen
    ∇

     CALC  ◇  GRBP
```



Thereafter, to chart additional bar plots, just change Y, and then run CALC and GRBP. To send the plots to the printer, simply change "DISPLAY" TO "PRINT" in the above examples.

These casual plotting functions can be extended to include additional functionality and decorations by incorporating more of the VDI features. (Refer to your APL★PLUS Graphics documentation and the GSS*CGI Programmer's Manual.) The conversion of the VDI plotting functions to operate with the APL★PLUS □G-style graphics primitives is left as a straightforward exercise for the reader.

Ralph Fox is Product Development Manager for APL★PLUS PC products.

APL★PLUS *News*

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